

REMARKS/ARGUMENTS

Claims 2-19 are pending in this application. By this Amendment, claims 2 and 19 are amended for clarification purposes only. Support for the claims can be found throughout the specification, including the original claims and the drawings. Withdrawal of the rejections in view of the above amendments and the following remarks is respectfully requested.

Entry of the amended claims is proper under 37 C.F.R. §1.116 since the amendments: (1) place the application in condition for allowance (for the reasons discussed herein); (2) do not raise any new issues requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution without incorporating additional subject matter); (3) satisfy a requirement of form asserted in the previous Office Action; and/or (4) place the application in better form for appeal (if necessary). Entry is thus requested.

I. Rejection Under 35 U.S.C. §102(b)

The Office Action rejects claims 2-7 under 35 U.S.C. §102(b) over Hirobumi et al., Japanese Patent Publication No. 2001-110939 (hereinafter "Hirobumi"). The rejection is respectfully traversed.

Independent claim 2 is directed to a plating method for a printed circuit board. The method includes, *inter alia*, using some of a plurality of circuit patterns provided in a substrate as a power connection portion and connecting the power connection portion to an external power source, and covering a surface of the substrate excepting the connection pads with a plating resistance resist to shield it. The method also includes supplying power to the connection pads

through the power connection portion and forming a gold-plated layer on the connecting pads, and disconnecting the power connection portion from the external power source. Hirobumi neither discloses nor suggests such features, or the claimed combination of features.

Hirobumi discloses a method of manufacturing a semiconductor package in which non-electrolytic copper is deposited on an entire surface of a substrate, a plating resist material is deposited on a solder surface, and a portion of the non-electrolytic copper is removed by etching. An electrolytic nickel/gold coat is applied to an exposed surface of a copper pad, and resist material is removed. Hirobumi neither discloses nor suggests that any portion of the resulting circuit patterns are connected to an external power source so that power can be supplied therethrough to any type of connection pads, nor that a gold plated layer is formed as such power is supplied, as recited in independent claim 2.

The Office Action asserts that current flows through a conductive layer 5 on a side of a circuit board (presumably, the bottom side as shown in the drawings) opposite a bonding pad (unspecified), through a through hole 3, through a circuit pattern formed on a top side of the board, and to a bonding pad that is exposed to a plating solution through an opening in a resist material 4. However, Hirobumi neither discloses nor suggests that the conductive layer 5 is or may be connected to any type of external power source, nor that such a connection would carry any externally supplied power along the path suggested in the Office Action. Thus, Hirobumi neither discloses nor suggests using circuit patterns provided in a substrate as a power connection portion and connection the power connection portion to an external power source,

as recited in independent claim 2. Further, Hirobumi necessarily neither discloses nor suggests disconnecting such a power connection portion from an external power source, as recited in independent claim 2.

It is further submitted that this alleged flow path for current through Hirobumi's substrate is not supported by Hirobumi's disclosure, and would include gaps in connectivity. For example, as shown in Figure 2 of Hirobumi, if current flows along the lower conductive layer 5 and into the metallized through hole 3 (presumably, through the lower portion of the circuit pattern 2 and then up along the left side of the through hole 3), then any such current flow would end at the end of the copper circuit pattern 2. The opposite sides of the through hole 3 are separated by resist material 4, and thus current is not directed to the right side and up to the opening in the resist material 4 on the upper side of the substrate, as suggested in the Office Action.

Accordingly, it is respectfully submitted that independent claim 2 is not anticipated by Hirobumi, and thus the rejection of independent claim 2 under 35 U.S.C. §102(b) over Hirobumi should be withdrawn. Dependent claims 3-7 are allowable at least for the reasons set forth above with respect to independent claim 2, from which they depend, as well as for their added features.

II. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 8-19 under 35 U.S.C. §103(a) over Figures 1-3 of the present application in view Hirobumi. The rejection is respectfully traversed.

Independent claim 9 is directed to a plating method for a printed circuit board. The method includes using some of a plurality of circuit patterns provided at a surface of a substrate as first and second power connection portions and connecting the first power connection portion to an external power source, covering the surface of the substrate with a ball pad formed thereon with a plating resistance resist to shield it, supplying power to the bonding pad through the first power connection portion for forming a gold-plated layer on the bonding pad, and removing the connection from the external power source to the first power connection portion.

The method also includes connecting the second power connection portion to the external power source and coating a plating resistance resist at a surface of the substrate with the bonding pad formed thereon to shield it, supplying power to the ball pad through the second power connection portion for forming a gold-plated layer on the ball pad, and removing the connection from the external power source to the second power connection portion.

Independent claim 19 recites similar features in varying scope.

As acknowledged in the Office Action, Figures 1-3 of the present application neither disclose nor suggest each of the features of independent claims 9 and 19, or the respective claimed combinations of features. Further, as set forth above, Hirobumi fails to overcome the deficiencies of Figures 1-3 of the present application.

Accordingly, it is respectfully submitted that independent claims 9 and 19 are allowable over the applied combination, and thus the rejection of independent claims 9 and 19 under 35 U.S.C. §103(a) over Figures 1-3 of the present application and Hirobumi should be withdrawn.

Dependent claims 10-18 are allowable at least for the reasons set forth above with respect to independent claim 9, from which they depend, as well as for their added features.

Likewise, dependent claim 8 is allowable over Figures -13 of the present application, either alone or in combination with Hirobumi, at least for the reasons set forth above with respect to independent claim 2, from which it depends, as well as for its added features. Accordingly, the rejection of claim 8 under 35 U.S.C. §103(a) over Figures 1-3 of the present application and Hirobumi should be withdrawn.

III. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned **Joanna K. Mason**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and
please credit any excess fees to such deposit account.

Respectfully submitted,
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